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Consultant, H. M. Q. Rania AlAbdallah office/ The Royal Court, for renewable energy, 1999 – 201./

Chairman of the Q. A. Reward committee, for Univ. Students in the yearly competition in” Energy and Environment” 2009.

Receipt of 2012 **Elsevier Certificate of Excellence in Reviewing Award**, Int. J. Energy and Building. (ENB).

Participant of the **Technology Road Map’11, coordinated by Embraco**, Brazil,. (90 members world wide)

Professor in ME, 1999– now.

Dean, FET, UJ. (2003-2005),

Director, Energy Center. UJ. (2006 – 2007)

Member, Advisory Board, Centre of Energy and Environment, VITS, India, 2007 - now

Director General, Global Network for Renewable Energy Approaches for Desert Regions. (2006 – 2011).

Representative, delegate, IIR. (International Institute of Refrigeration, Paris), 2011 –

DEGREES:

PhD Mechanical Engineering, 1982, Univ. of Strathclyde, Glasgow, U. K.
“ Optimization Study of a Refrigeration Cycle”

MSc Mechanical Engineering, 1976, Univ.of Strathclyde, Glasgow, U. K.
“Computer Simulation of a Refrigeration Compressor”

BSc Aeronautical Engineering, 1968 Cairo Univ. Egypt.

WORK EXPERIENCE :

1999 – 2001 Consultant, H. M. Q. Rania AlAbdallah office/ The Royal Court, for renewable energy.

2006 – 2007 Director, Energy Center.

2003- 2005 Dean, faculty of Eng. And technology,

2002-2003 Visiting professor, AlHashemia University.

1998-2002 Director, Renewable Energy Office, University of Jordan.

1999-2002 Chairman , Mechanical Engineering Department. University of Jordan.

- 1997 Aug. Visiting Researcher.** Expert Solar Cooling for NATO-TU COATING project at MARMARA research center.
- 1995-1996 Editor,** Energy conservation section, Jordanian Journal of Energy Abstracts, The higher council Science and Technology.
- 1994 Consultant,** United Nations Development Program, Jerusalem, on Energy Management, For West bank and Gaza.
- 1989-1990 Consultant,** STATS com.UK.

Society Memberships :

ASME, ASHRAE, IIR, JEA, NEW YORK Academy of Science, (NYAS).

Reviewer for: J. of Energy and buildings.

- J. of Energy Conversion and Management.
- J. of Heat and Mass transfer.
- Int. J. of Energy.
- Int. J. Applied Thermal Engineering,
- Int.J. Quality in Maintenance Engineering.
- J. of Porous Media
- J. of transport in porous media.
- J. of Materials Processing Technology
- J. of Experimental Thermal and Fluid Science
- DIRASAT, University of Jordan.
- Jordanian Journal of Mechanical and Industrial Engineering, (JJMIE)
- MUTA Lil-Buhooth wa Al-Dirasat, University of Muta.
- ABHATH AL-YARMOUK J., Alyarmouk Univ.

Subjects Taught:

- a) BSc Level:** Eng. Measurement, Comp. Simulation and optimization design, HVAC 1, HVAC 2, Thermodynamics 1, Thermodynamics 2 , Design of thermal systems, Energy conversion, Power Plants, heat transfer, fluid mechanic, Heat exchangers, Turbo-machinery, Sanitary systems.
- b) MSc Level:** Energy conservation and Renewable Energy, Energy management and Economics, Eng. Measurement, Simulation and optimization design, Advanced HVAC. Advanced Thermodynamics, Advanced design of thermal systems.
- c) PhD level:**
Statistical thermodynamics, Research Methodology, Convection heat transfer.

Awards:

- 1) Four times Award of Publishing in high **impact factor Journals**, 2011.
- 2) **Award of Recognition for Best applied Scientific Research** of the University of Jordan , 2000.
- 3) **Award and Medal** of the Outstanding Scientists of the 20th Century, IBC, Cambridge, England, 1998.
- 4) **The Golden Medal** of the Golden Jubilee of Pakistan, 1997.
- 5) **The Shield** of the Jordanian Engineers Association, 1997.
- 6) **The Medal** of the Third Jordanian Weeks of Science, Aug. 95.
- 7) **University of Jordan Scholarship for PhD** Studies, 1978.

Organized Meetings:

a) Chairman:

- 1) Global conference approaches for Desert Regions, 18th. 22nd, Sep. 2006, Amman, Jordan
- 2) IIR conf. On Latest developments in Refrigerated Storage, Transportation and Display of Food Products, University of Jordan, Amman, 28, 30 of March, 2005
- 3) The Second Jordanian International Conference In Mech. Engineering, JIMEC 97. The Jordanian Engineers Association in cooperation with the University of Jordan. Amman, June, 2-5, 1997.
- 4) The Energy Conservation in the Industrial Sector, Univ. of Jordan in co operation with the Jordan Electricity Authority, Amman, May, 4 – 6 1992.

5) Energy Conservation and Management special session of International Non Renewable Energy Conference, Tehran, Ira

b) Co-Chairman:

- 1) The First International Conference on Implementing Local Materials in Industrial Applications, Jordanian Engineers Association in co-operation with the University of Jordan, Amman, Sept. 6-9, 1993.
- 2) International Conference Of Energy and environment, 2000.
- 3) The Second Jordanian Conference of Refrigeration and Air Conditioning. Jordan Engineers Association, Amman, April, 18-20, 1992.
- 4) Coordinator, Renewable energy for sustainable development and clean environment, Amman, Jordan, 2002.

c) Member, Organizing Committee:

- 1) Member of the Int. Consultant comm., 22nd. Int. congress of Refrigeration (ICR2007), Beijing, 2007.
- 2) First and second Energy Conference, Amman, 1986.
- 3) Italian Jordanian Conference on Plastic Materials : Technology, Industry and Environment. 1998.
- 4) 2nd International Non Renewable Energy Conference, Tehran, Iran. 12 – 17, Dec.1998.
- 5) Int. Con. & Exh. On Green Energy and Sustainability, Al HashemiamUniversity, 10 – 12th. Nov. 2009.

d) Key Note Speaker:

- 1) New Developments in Solar Energy Workshop, MARMARA Research Centre, Istanbul, Turkey, June 14-16,1996.
- 2) The Mediterranean First Exhibition and Technical Innovation. Mediterranean Network on Science and Technology of Advanced Polymer-Based Materials, Naples, Italy, Nov. 5-12,1994.
- 3) Energy Conservation Seminar for industrial higher management, Amman, 29 th. Dec. 1997.
- 4) Development of Refrigerants Replacements/ university of Jordan efforts. Int. Con. On Energy Systems, Amman, 2000

e) Participant :

More than 20 local and international conferences were attended..

Membership :

- 1) Member of the National Board of Building, Jordan. (2003 – 2005)
- 2) Vice delegate/ Jordan, IIR, And Member of B1 commission of the International Institute of Refrigeration. B1/IIR.
- 3) Chairman of the Special Committee for evaluation of the Engineering Certificates, Ministry of Higher Education,
- 4) Chairman, Advisory Committee of the Universities of Jordan Student Branch of ASHRAE, 1995- Present.
- 5) Member of the National committee of Energy Conservation, Ministry of Energy and Mineral Resources, 1992-1994.
- 6) Member of the Int. Advisory Committee of the Int. Energy Foundation (IEF) (CANADA), 1996-present
- 7) Member of the Faculty of Engineering Council, Univ. of Jordan (elected) 1986-1987, and 1998 – present.
- 8) Member of the review/winner selection committee of the ADEEB HIJJAWI AWARD. Energy and Environment / Energy and Industrial section, 1994, 2008 and 2009.
- 9) Member of the Jordan Engineers Association Council, Mech, Eng. Branch. (elected), 1996-1998.
- 10) Chairman of the Department Committee for Higher Studies, and advisor for the

- graduate students.
- 11) Chairman, Continuing education comm.1993-1995.
 - 12) Member of ASHRAE, IIR, ASME.
 - 13) Member, ADVISORY BOARD, Centre of Energy and Environment, VITS, India.

Research Interests: Solar Cooling. Alternative refrigerants.

Energy Conservation & Environmental Impact of Energy.
Renewable Energy (Bio –Gas, Solar Photo-voltaic
generators.) and Ageing of Polymers.
Convictional heat transfer at change phase conditions.

MSc Students: (Number of Students, 20)

- 1.Optimisation of LiBr – H₂O Cycle Powered by Solar Energy.
2. The Use of a Mixture of Propane and butane gases as Refrigerants For Domestic Refrigerators.
3. Design of an Algorithm for Home Energy Conservation.
4. Experimental Investigation of a Solar Air Heating Module
Using Scrap Materials for Heat Storage.
5. Experimental Study of Thermal Performance of a Heat Storage System During Heat
Charging and Discharging Modes.
6. The Use of Mixtures of Propane/Butane as replacement to R22.
7. Modelling of the Performance of R 134a and R 152 Refrigerants in a Refrigeration
unit.
8. Performance of a domestic refrigeration , with replaced R-12 by R-134a.
- 9.Computer study of the refrigeration cycle, using a mixture of 70% propane and 30
butane.

PhD Students: Supervised the first PhD graduate in Engineering in Jordan
(number of Students, 10)

-- In Co-operation with the HERTFORDSHIRE University, UK. Two students on
Developing a High Speed Micro GT – Generator Set.

U J students (8) on.

- 1) Conduction HT, modes and solutions.
- 2) Second law analysis of a GT.
- 3) Performance of CO₂ in a transcritical refrigeration cycle.
- 4) Heat transfer of CO₂ during cooling, condensation and evaporation.
- 5) CO₂ condensation and evaporation in porous media in a pipe.
- 6) CO₂ condensation and evaporation inside micro tubes.
- 7) Power output by Insenerating hazardous materials.

Projects :

1- Designing and producing a thermal chamber to test air Infiltration in windows, testing

Local manufactured windows, in co-operation of :

- a. Al Buraq Glass company.
- b. Jordan-German Aluminum Company.
- c. Petra Al. company .
- d. JAMCO.
- e. Al Masry al. company.
- f. Kurdea and Hakeem Co.
- g. Al Memar. Al. Co.

2- Testing of local manufactured plastic pipes, in co operation with:

- i. Abu Jad Foundation.
- ii. World of Plastic.

- iii. Aquapex Co.
 - iv. Alphacan Plastics.
 - v. Physics department.
- 3- Solar cooling using absorption cycles. In co-operation with:
 - IV) Jordan electricity authority.
 - V) Rock wool manufacturing Co.
 - 4- Bio gas Production project in the university farm. In co-operation with :
 - 1- Jordan electricity authority.
 - 2- Faculty of agriculture .
 - 5- Potential of Hydro power in Jordan . In co-operation with Jordan electricity authority.
 - 6- Energy conservation by using evaporation cooling. In co- operation with:
 - 1- Jordan electricity authority.
 - 2- Petra engineering Co.
 - 7- Testing of medium temperature locally manufactured boilers. In co-operation with:
 - 1- MEMCO
 - 2- Nicolas C. Peridakis Co.
 - 8- Propane – Butane – Methane As Alternatives for Freons, In co-operation with :
 - 1- HAMCO.
 - 2- PETRA manufacturing company.
 - 9- Enviromental effect of local energy sources in the west bank and Gaza. In co-operation with:
 - 1- Najah Univ.
 - 2- IDRC. Canada.

Total Budget of C\$ 120.000.00
 10. Commercialisation of Bio-gas Units.

World Health Organisation, WHO, Environmental Protection Agency, (CEHA)
Budget of US\$ 16.000.00 IN SWAMEH village, Jordan Valley.
 11. Solar Cooling Using Modified Flat plate Collectors with Selective Coating, in co-operation with MARMARA research center, Turkey. The Project was supported financially by NATO with total budget of US\$ 600.000.00.
 12. Establishing a committee for the cooperation with the armed forces in the renewable energy field.
 13. Establishing the renewable Energy Office, Univ. of Jordan.
 14. Establishing and furnishing King Abdullah the second lab for High speed micro turbines. (KADDB).
 15. Cooperation with Giacomini comp. Italy. And building Giacomini Research Center. In the department. (US\$ 31.000.00).
 16. Ageing Effect on Properties of Plastic pipes used in domestic heating Systems. Supported by the higher council for science and technology, (US\$ 14.000.00)
 17. Energy management and auditing for ARAB POTASH COMPANY, Cost of US\$ 25.000.00

Work Related to Energy Auditing:

- 1- Teaching of the course" Energy Management and Economics" for the MsC students, Mech. Engineering Department, Univ. of Jordan. This course includes a project for each student to carry out Energy Auditing for a chosen industrial company.
- 2- Director of the Energy Center, university of Jordan, during the period of 2006 and 2007. and director of the Energy office during the period of 1999 till 2001.
One interesting field of both the center and the office is the Energy Conservation"
- 3- I was the head of a team that conducted Energy auditing study for the Arab Potash Company. During the year of 2002 – 2003. The report included Energy and Water Auditing works and recommended projects, It included recommendations of non costing changes, short term and low costing energy projects and long term and costing energy changing projects. Expected energy savings were about 15% of the total consumption.
- 4- Small and medium companies auditing projects:

- a) Bazin restaurant in Petra, this project included a study of changing lights for energy saving bulbs, cutting energy use by using solar water heaters, and supplying the refrigerators by solar energy generator using photo voltaic modules. It was meant to free the historic site from gas emissions of a Diesel generator.
- b) A study was forwarded to Al-Husseing Medical City for a proposal to conduct energy auditing and propose energy conservation projects.
- c) A study forwarded to the UNDP/ Jordan office to submit projects to conserve energy for the KADDB offices building in Amman.
- d) Under my supervision, the following projects were carried out by my students for energy savings of:
 - 1) Arab Aluminum factory.
 - 2) Engineering consultants offices.
 - 3) Faculty of Engineering Building, University of Jordan.
 - 4) A multi story building in west Amman.

In all projects energy auditing was carried out, concerning lighting, domestic hot water heating and all aspects of energy use. Financial costs of propose projects were discussed.

PUBLICATIONS

Journals:

Google scholar citation and scopus author over view mentioned:

- Around 38 journal papers, published in high impact factor journals.
- Citations for all these papers are around 272 times.
- The h author index is about 12 and the i-10 index also around 12.
- The second citation reached about 3000 times registered by both sights.

Journal papers in Arabic:

1. Hammad, M. "Production of Fuel from Crops in Jordan" in Arabic, DIRASAT, 1992, vol. 19B, No2 , pp 17-27.
2. 5. Hammad, M "Food Cocking in Rural and Desert Sectors of JORDAN, Energy Study" in ARABIC.DIRASAT, university of Jordan, vol. 20b, April 1993, No 2, pp.29-46.

Journal papers in English:

3. Hammad. M. "Perfomance Characteristics of Inexpensive Locally Manufactured Heat Pipe Using Different Working Fluids" DIRASAT , vol. 14. No 10. 1986. pp 221-228.
4. Hammad.M. "Investigation of Heat Transfer Characteristics of Inexpensive Locally Manufactured Heat Pipe, Part 2 "DIRASAT, vol. 14. No 9, 1987. pp 231-244.
5. Hammad,M. and Audi, M. "Experimental Study of Infiltration of Windows Manufactured in JORDAN" Int. J. of Energy Research, N. Ireland, vol. 16, No. 3, 1992, PP. 213 – 222.
6. Audi, M. and Hammad, m."Influence of the Psychrometric Values on the Heating and Cooling Loads of a Building" Engineering Research Bulletin, Helwan Uni. 1993.
7. Hammad, M. and Mahmoud, m. "Thermodynamics and Electric Behaviour of a Mono-crystalline Photo voltaic module Under Natural Weather Conditions" Alexandria . Engineering Journal, vol. 32,No. 1. January 1993. p. B27.
8. HammaD,M. and Audi, M. "Performance of a Solar LIBR-Water Absorption Refrigeration System" Int. J. of Renewable Energy, Reading, U.K. Vol. 2, No. 3, pp 275 – 282 , 1992.
9. Hammad, M. Audi, M. and Akkawi, M. "Optimum Design of Air Curtains for Energy Conservation." Dirasat, vol. 22B, No. 1 , 1995, p. 199.
10. Arafeh. D. ramadeen, Y. hammad, M. and zihlif, A. "Ageing Effect of Polypropylene used in Heating Systems". Int. J. of radiation, Physical and Chemical, vol.41. No. 3, 1993, pp 553-558.
11. Hammad, M. " Flash Vapour Desalination Unit, Optimization Study" Int. J. of Renewable Energy, vol.3, No. 6,7, 1993, pp 591 – 597.

12. HAMMAD, M. "Thermal Environment and Comfort in Jordan" DIRASAT, vol. 21B, No.2, March, 1994, 35 – 48.
13. Hammad, m. and Khatib, T. "Energy Parameters for a Solar Car in Jordan" Energy Conversion and Management, vol. 37, No. 12, p1695, 1996.
14. Hammad, M. Abu – Ras, R. and Abu – Zahra, B. "The Potential of Hydropower Generation in Jordan" Energy Policy. Vol. 22, No 6. June, 1994. pp 523- 530.
15. HAMMAD, M. " Experimental Study of The Performance of a Solar Collector Cooled by Heat Pipes" J. of Energy Conversion, vol. 36, No. 3, pp. 197-203. 1995.
16. HAMMAD, M. " Experimental Study of The Performance of a Solar Collector Cooled by Heat Pipes" Dirasat, Vol. 22B, No. 3, 1995.
17. HAMMAD, M. " Experimental Study of The Performance of a Solar Collector Cooled by Heat Pipes" J. of Renewable Energy, vol. 6, No. 1, pp. 11-15. 1995.
- 18- HAMMAD, M. " Experimental Study of the Performance of Solar Thermal – Photovoltaic Integrated System" Int. J. of renewable Energy, vol. 4 No. 8, 1994, pp. 897 – 905.
- 19- HAMMAD, M. and ABU RAS, R. " Second Generation of the Solar Cooling Systems, paper II" Int. J. of Renewable Energy, vol. 5, No 9-12, Aug. 1994, pp. 1814 – 1816.
- 20- HAMMAD, M. and ABU ZAHRA, B. "Optimization of a Solar Refrigeration System Works by LiBr- H₂O Absorption Cycle" Applied Energy, vol. 52, No 2&3 (supplement), 1995, pp. 510 – 531.
21. ABURAS, R. HAMMAD, M. HIRAY, S. ABU REESH, I. S. and QSOUS, S. "Construction and Operation of a Demonstration Biogas Plant: Problems and Prospects." Bioresources Technology, vol.52, No.2,pp 101-103, 1995.
22. HAMMAD, M. ABU RAS, R and QOUSOUS, S. " Experimental Study for the Use of Desert Coolers in Aqaba and Jordan Valley Areas". DIRASAT, vol.22B, No 5, pp. 157 – 177 .1995.
23. ABURAS, R. HAMMAD, M. HIRAY, S. ABU REESH, I. S. and QSOUS, S. "Construction and Operation of a Demonstration Biogas Plant: Problems and Prospects." Energy conv. & Mgmt. Vol. 37, No. 5. Pp. 611 – 614. 1966.
24. HAMMAD, M. and Zurigat, Y. "Performance of a Second Generation Solar Cooling Units". J. of solar energy, Vol. 62, 1998, No 2, pp. 79 – 84.
25. HAMMAD, M. " Photovoltaic, Wind and Diesel ; A Cost Comparative Study of Water Pumping Options in Jordan" ENERGY POLICY, vol.23, No.8,pp.723-726, 1995.
26. Hammad, M. " Characteristics of Solar Water Pumping in Jordan" J. of energy, Vol. 24, 1999, pp. 85 – 92.
27. HAMMAD, M. ALSAAD, M. and Habash, A. "Lequefied Petrol gas As An R – 12 Replacement" University of Aden J. of Natural & Applied Sciences, V. 1, No2, 1998.
28. HAMMAD, M " Energy Performance of Plastic Pipes" Int. J. of Polymer Testing, vol. 18, No 2, April. 1999.
29. HAMMAD, M. ZURIGAT, Y , KHZAI, S. HAMMAD, Z. MOBYDEEN, O. "Fluidized Bed Combustion Unit for Oil Shale" J. Energy Conversion and Management. Vol. 39, (1996), N. 3&4, pp. 269 – 272.
30. HAMMAD, M. ALSAAD, M. and HABASH, A. "The Use of Mixture of Propane and Butane for Domestic Refrigerators." Univ. of Aden J. of Natural and Applied Sciences, Vol.1, No 2, pp 91 – 100.
31. HAMMAD, M. "Building and Testing of a Solar Refrigeration Unit. ". Muta Journal for researches and studies, vol. 12, No 2, p. 9, 1999.
32. HAMMAD, M. ARAF AH, D – E. RAMADEEN, Y. and ZIHILF, A. "Working Life Effect on Properties of Plastic Thermo pipes" Journal of Material Science, vol. 33, 1998, 4167 4171.
33. ALSAAD, M. and HAMMAD, M. "The Application of Propane / Butane Mixture for Domestic Refrigerators" Applied Thermal Engineering J. Vol. 18, Nos 9 – 10, p.911. 1999.
34. HAMMAD, M. and ALSAAD, M. "The Use of Hydrocarbon Mixtures as Refrigerants in Domestic Refrigeration." J. Applied Thermal Engineering, Vol.19, No 11, P . 1181. 1999.
35. HAMMAD, M. BADARNEH, D. and TAHBOUB, K. "Evaluating Variable Organic Waste to Produce Methane". Energy conv. And Manaft. J. Vol. 40, No. 14. p. 1463, 1999.
36. HAMMAD, M. and S. Habali "Design and Performance of a Solar Energy Powered Vaccine Cabinet" J. Applied Thermal Engineering, vol. 20, No 18, pp. 1785 1798. 2000

37. KHADRAWI, A. AL NIMER, M and HAMMAD, M. "Thermal Behavior of Perfect and Imperfect Contact Composite Slab Under the Effect of the Hyperbolic Conditions Model" *Int. J. of Thermo-physics*, vol. 23, No 2, March 2002.
38. AL NIMER, M. KHADARAWI, A. and HAMMAD, M. "A Generalized Thermal Boundary Condition for the Hyperbolic Heat Conduction Model". *Heat and Mass Transfer*, 39 , (2002), 69 – 79.
- 39- Al-Halhouli A.T., Abu-Mulaweh H.I., Hammad M., Alhusein M., and Al-Shannak B., "Experimental apparatus for measurements of two-phase slug flow pressure drop in a T-junction" *the International Journal of Mechanical Engineering Education*, (ijmee) Manchester University Press. Volume 36, Number 3, July 2008 , pp. 184-192
- 40- Hammad, M. and AlShqirate, A. "Simplified Correlation Equations of Heat Transfer Coefficient During Phase change for flow inside tubes". *Journal of Energy and Power Engineering., JEPE*. 2012. V. 6, No. 10, pp 1543 – 1556.
- 41- AlShqirate, A. Tarawneh, M. and Hammad, M. "Dimensional Analysis and Empirical Correlations for Heat Transfer and Pressure Drop in Condensation and Evaporation Processes of Flow Inside Micropipes: Case Study of Carbon Dioxide (CO₂) " *Journal of the Brazilian Society of Mechanical Engineering, JBSME*. V XXXIV, No 1, 2012
42. AbdelGadir, E. and Hammad, M. " Technical and Economical Feasibility of Solar PV Pumping of Water in Sudan". *The Energy Manager*, Vol. 1, issue 7, July – Sept. 2009, pp 12 – 19.
43. Al-Halhouli A.T., Hammad M., Abu-Mulaweh H.I., Alhusein M., and Al-Shannak B., "Two-Phase Slug Flow Pressure Drop in a Tee-Junction." *International Journal of Fluid Mechanics Research,(IJFMR)*, 2010, v 37.i 2, pp. 178 – 189.
44. Tarawneh, M., Alshqirate, A. and Hammad, M. 2011, "Study of heat transfer and pressure drop during condensation and evaporation processes in porous media, using experimental work and dimensional analysis. Case Study of Carbon Dioxide (CO₂). *Int.J. of Porous media*, Volume 13, No 9, pp. 805 – 814, (2011).
45. Hammad, M. AlShqirate, A. and Tarawneh, M. 2011 "Cooling of Superheated Refrigerants Flowing Inside Tubes Filled With Porous Media, Study of Heat Transfer and Pressure Drop, CO₂ Case Study." *J. of Energy and Power Engineering*, V, 5, No. 9, pp 802 – 810.
46. Farrage, A., Mallouh, M. Kalendar, A. AlShqirate, A. and Hammad, M." Experimental Study of Solar Powered Air Conditioning Unit Using Drop In Hydro Carbon Mixture to Replace R-22." *JJMIE*, V. 6, No. 1. pp. 63 – 70.
- 47- Tarawneh, M. AlShqirate, A. And Hammad, M. "Heating of sub cooled refrigerants flowing inside porous tubes, study of heat transfer, CO₂ case study." *Int. J. Of Thermal & Environmental Engineering*, V. 3 NO 2 (2011), 121 – 124.
48. AlShqirate, A. Hammad , M. and Tarawneh, M. "Cooling of Superheated Refrigerants Flowing Inside Mini and Micro Tubes, Study of Heat Transfer and Pressure Drop, CO₂ Case Study." . *The Jordanian Journal of Mechanical and Industrial Engineering., JJMIE*. V 6, N. 2, April 2012.
49. Alshqirate, A. and Hammad, M. Surface Tension Effect on Heat Transfer Coefficient of Condensed Gases Flow Inside Micropipe Heat Exchangers. Under consideration.
50. AlShqirate, A. Tarawneh, M. and Hammad, M. "Study of heat transfer for superheated refrigerants flow inside micropipe heat exchanger." *The Australian Journal of Basic and Applied Sciences, (SIS Journal)*,. Vol. 6, Oct. 462-468, 2012.,
51. Tarawneh, M. Alshqirate, A. Khasawneh, K. Hammad, M. " Experimental Study on the Effect of Porous Media on Performance of a Single Heat Exchanger: CO₂ Case Study.", *Heat Transfer- Asian Research*, Wiley Periodicals, Heat Transfer—Asian Research, 42 (6), 2013
52. Ktamat, A. Hammad, M. Alshqirate, A. "Trough Solar Concentrator in Maan Region, Performance Study." Under Consideration.
53. Ebaid, M. Qandil, H. Hammad, M. "A completed study of the probability of using photovoltaic solar system for the underground water well pumping at Disi area" Accepted, *Australian Journal of Basic and Applied Sciences. (AJBAS)*

54. Ebaid, M. Qandil, H. Hammad, M." A Unified Approach for a Photovoltaic Solar System for the Underground Water Pumping Well-34 at Disi Aquifer." Accepted, Int. J. of Energy Conversion and Management.
55. Qandil, H. Ebaid, M. Hammad, M."Economic Viability, Environmental Impact and Risk Assessment of Photovoltaic Solar System for Underground Water Pumping at Disi Project." Under consideration.
56. Hammad, M. " Looking For New Site of High Potential for Wind in Jordan" Under preparation.

Papers published in another language journals:

57. Hammad, M. and Tarawneh, R. Hydrocarbons Refrigerants Performance in Air conditioning Systems. Science et Technique du Froid, in **French**, pp172 -180, 2001
58. Hammad, M. and AlShqirate, A. (2011)" Cooling of Superheated Refrigerants Flowing Inside Mini and Micro Tubes, Study of Heat Transfer and Pressure Drop, CO₂ Case Study, second paper." Accepted at 12th. Oct. 2011, in **Spanish**, Journal Frio – Calor – Air Acondicionado.

Conferences:

Key Note Addresses:

59. Solar Cooling Second Generation Units Performance. New Developments in Solar Energy Workshop, Istanbul, Turkey, 14-16, June, 1996.
60. Ageing Effect of Plastic pipes Used in Heating Systems. 1st. Exhibition and Tech. Innovation, Naples, Italy, 5-12, Nov.1994.
61. Environmental Impact of Energy Generation, Seminar for higher industrial management, Amman, 29th. Dec. 1997.
62. Advances in the use of solar energy for cooling purposes 2nd. Int. Non Renewable energy Resources Congress. Tehran, Iran, 12 – 17, Dec. 98.
63. Combined Cycle for Electrical generation: higher eff. And better Environment. 2nd. Int. Non Renewable energy congress, Tehran, Iran, 12-17, Dec. 98.
64. Latest development in Replacing CFCs mainly by HCs. Univ. of Jordan efforts, "Int. Conf. Of Energy Systems, 2000, ICES 2k. 25th. Sept. 00. Amman, Jordan.
65. Road map for Refrigeration and air conditioning, 2013 to 2020.
66. Solar Energy world wide over look. Int. Conf. on Energy; Water and Environment, ICEWE, 21st. -23rd. April, 2013, Hashemite University.

Local conferences:

67. Hammad, M. energy conservation in Industry, in Arabic, Proceedings of the Energy conservation in industry conference, University of Jordan, Amman, Jordan May, 4-6th., 1992.
68. HAMMAD, M. "Solar Cooling Activities in JORDAN" 2nd. International Conference on Refrigeration" Amman, Jordan, April 1992. Pp.249 – 261.
69. AUDI, M. and HAMMAD, M. "A Low Cost Solar LIBR-Water Cooling System." 4th. Arab Int. Solar Energy Conference. 20 – 25, Nov, 1993. Amman – Jordan, pp 891 – 902.
70. HAMMAD, M. "Energy Analysis and Optimization Study of a refrigeration Cycle, Using Liquid-Suction heat Exchange ". International Conference of Energy Systems, Amman, 15-17 May, 1989.
71. HAMMAD, M. "Fuel Production in Farms" in ARABIC. International Renewable Energy Conference, Amman, Jordan, 1992. Pp. 622,633.
72. HAMMAD, M., ZIHLIF, A., RAMADEEN, Y. ARAFAH,D. "Effect of Working Life on Plastic Thermo-pipe" The first int. conference on local materials used in Industry Amman Jordan, 6 – 9 Sep. 93. Pp 413 – 425.
73. HAMMAD, M. "Biogas Generation in the Farms" The third Jordanian Week of Science, Amman, Jordan, August, 1995.
74. HAMMAD, M. and Zurigat, Y. "Performance of a Second Generation Solar Cooling Units". Proceedings of 2nd. Jordanian Int. Conference of Mechanical Engineering, JIMEC, 97. Pp. 729 – 744.
75. Hammad, M. "Environmental, and Weather Effect of Power Generation"

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